

**SPECULATIVE METHOD AND SYSTEM FOR RAPID DATA COMMUNICATIONS**

**ABSTRACT OF THE DISCLOSURE**

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A system and method that utilizes a dedicated transmission queue to enable expedited transmission of data messages to adaptive "nearest neighbor" nodes within a cluster. Packet descriptors are pre-fetched by the communications adapter hardware during the transmission of the preceding data element and setup for the next transmission is performed in parallel with the transmission of the preceding data element. Data elements of a fixed length that is equal to the cache line size of the communication hardware can optionally be used to provide optimized transfer between computer memory and communications hardware. The data receiving processing can also be optimized to recognize and handle cache line size data elements.

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